

Serial No. 09/988,296
Amdt. dated November 24, 2003
Reply to Office Action of July 23, 2003

Docket No. MRE-0042

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-15 (Canceled)

BP

16. (Currently Amended) ~~The A~~ surface mounting method, comprising the steps of:
~~carrying transporting~~ a printed circuit board loaded to on a first multi-layer transfer unit into to a first conveyor under control of a controller;
discharging the printed circuit board ~~carried to~~ from the first conveyor to a second multi-layer transfer unit under control of the controller;
~~carrying transporting~~ the printed circuit board ~~discharged to~~ loaded on the second multi-layer transfer unit to a second conveyor under control of the controller; and
discharging the printed circuit board ~~carried to~~ from the second conveyor to the first multi-layer transfer unit under control of the controller.

17. (Currently Amended) The surface mounting method of claim 16, wherein ~~in the~~ step of discharging the printed circuit board ~~carried to~~ from the first conveyor to the second multi-layer transfer unit under control of the controller ~~[[,]]~~ comprises discharging the printed

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circuit board ~~can be discharged from the first conveyor to~~ the second multi-layer transfer unit in a state that parts are mounted or not mounted under control of the controller.

18. (Currently Amended) The surface mounting method of claim 16, wherein ~~in the step of discharging the printed circuit board carried to from~~ the second conveyor to the first multi-layer transfer unit under control of the controller ~~[[,]]~~ comprises discharging the printed circuit board ~~can be discharged from the second conveyor to the first~~ multi-layer transfer unit in a state that parts are mounted or not mounted under control of the controller.

B4
19. (Currently Amended) The A surface mounting method, comprising the steps of: carrying alternately distributing a printed circuit board boards loaded to on a first multi-layer transfer unit to a first conveyor and a second ~~conveyors~~ conveyor under control of a controller; and

mounting parts on ~~the each~~ printed circuit board by a head unit when the printed circuit board is boards are carried to a respective parts mounting area by the first conveyor and the second conveyers conveyor.

alternately discharging the printed circuit board disposed at boards from the first conveyor and the second conveyers alternately onto the conveyor to a second multi-layer transfer unit under control of the controller when parts mounting is finished[,]; and

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loading the printed circuit board boards alternately discharged from the first conveyor and the second conveyor onto the second multi-layer transfer unit when the printed circuit board is discharged from the first and second conveyers alternately.

20. (Currently Amended) The surface mounting method of claim 19, wherein ~~in the~~ step of carrying the printed circuit board alternately distributing printed circuit boards loaded on the first multi-layer transfer unit to the first and second conveyers under control of the controller, ~~the~~ comprises carrying a printed circuit board loaded on the first multi-layer transfer unit ~~is carried~~ to the first conveyer under control of the controller, and then ~~is carried~~ carrying a printed circuit board to the second conveyer after a predetermined time.

BK
21. (New) The surface mounting method of claim 16, further comprising
lifting the PCB loaded on the first conveyor and the PCB loaded on the second conveyor to a mounting position;

mounting parts on the PCBs lifted to the mounting position by the first conveyor and the second conveyor; and

lowering the PCBs to their original positions on the first conveyor and the second conveyor when the mounting operation is complete.

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22. (New) The surface mounting method of claim 16, wherein transporting the printed circuit board loaded on the first multilayer transfer unit to the first conveyor further comprises:

moving the first multilayer transfer unit with the printed circuit board loaded thereon in a horizontal direction through the action of a driving device, and in the vertical direction through the action of a lifting device so as to position the first multilayer transfer unit adjacent to the first conveyor; and

transferring the printed circuit board from the first multilayer transfer unit to the first conveyor through the action of a plurality of transfer rollers of the first multilayer transfer unit.

23. (New) The surface mounting method of claim 16, wherein discharging the printed circuit board from the first conveyor to the second multilayer transfer unit further comprises driving a first conveyor driving unit, and actuating a plurality of first conveyor rollers to transfer the printed circuit board from the first conveyor to the second multilayer transfer unit.


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24. (New) The surface mounting method of claim 16, wherein transporting the printed circuit board loaded on the second multilayer transfer unit to the second conveyor further comprises:

moving the second multilayer transfer unit with the printed circuit board loaded thereon in a horizontal direction through the action of a driving device, and in the vertical direction through the action of a lifting device so as to position the second multilayer transfer unit adjacent to the second conveyor; and


transferring the printed circuit board from the second multilayer transfer unit to the second conveyor through the action of a plurality of transfer rollers of the second multilayer transfer unit.

 25. (New) The surface mounting method of claim 16, wherein discharging the printed circuit board from the second conveyor to the first multilayer transfer unit further comprises driving a second conveyor driving unit, and actuating a plurality of second conveyor rollers in order to transfer the printed circuit board from the second conveyor to the first multilayer transfer unit.

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26. (New) The surface mounting method of claim 19, further comprising:
lifting the PCB loaded on the first conveyor and the PCB loaded on the second conveyor to a mounting position when the first conveyor and the second conveyor reach their respective parts mounting areas;
mounting parts on the PCBs lifted to the mounting position by the first conveyor and the second conveyor; and
lowering the PCBs to their original positions on the first conveyor and the second conveyor when the mounting operation is complete.

27. (New) A surface mounting method, comprising:
providing at least one printed circuit board loaded on a first multilayer transfer unit to a first conveyor;
providing at least one printed circuit board loaded on the first multilayer transfer unit to a second conveyor;
 transporting the printed circuit boards loaded on the first conveyor and the second conveyor to a respective parts mounting area;
discharging the at least one printed circuit board loaded on the first conveyor to a second multilayer transfer unit; and

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discharging the at least one printed circuit board loaded on the second conveyor to the second multilayer transfer unit.

28. (New) The surface mounting method of claim 27, wherein the at least one printed circuit board loaded on the first conveyor is transferred to the second conveyor via at least one of the first multilayer transfer unit and the second multilayer transfer unit before it is discharged to the second multilayer transfer unit.

29. (New) The surface mounting method of claim 27, wherein the printed circuit boards are provided alternately to the first conveyor and the second conveyor by the first multilayer transfer unit.

30. (New) The surface mounting method of claim 27, wherein the printed circuit boards are alternately discharged from the first conveyor and the second conveyor to the second multilayer transfer unit.

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31. (New) The surface mounting method of claim 27, further comprising:

lifting the PCB loaded on the first conveyor and the PCB loaded on the second conveyor to a mounting position when the first conveyor and the second conveyor reach their respective parts mounting areas;

mounting parts on the PCBs lifted to the mounting position by the first conveyor and the second conveyor; and

lowering the PCBs to their original positions on the first conveyor and the second conveyor when the mounting operation is complete.

B24 concluded